CLAIMS

1. A process for producing arachidonic acid comprising the steps of culturing a microorganism, belonging to the genus Mortierella and having resistance to a carbon source of high concentration, in a medium having a carbon source concentration of at least 4% by weight at the start of culturing, thereby forming arachidonic acid or lipid containing arachidonic acid, and recovering arachidonic acid.

2. A process for producing lipid containing arachidonic acid comprising the steps of culturing a microorganism, belonging to the genus Mortierella and having resistance to a carbon source of high concentration, in a medium having a carbon source concentration of at least 4% by weight at the start of culturing, thereby forming lipid containing arachidonic acid, and recovering lipid containing arachidonic acid.

3. The process according to claim 1 or 2, wherein the microorganism belonging to the genus Mortierella is a microorganism belonging to subgenus Mortierella.

4. The process according to claim 3, wherein the microorganism belonging to subgenus Mortierella is a microorganism belonging to the species alliacea.

5. The process according to claim 3, wherein the microorganism belonging to subgenus Mortierella is a microorganism belonging to the species alpina.

6. The process according to claim 3, wherein the microorganism belonging to subgenus Mortierella is the genus Mortierella, strain SAM 2197 (FERM BP-6261).

7. The process for producing arachidonic acid or lipid containing arachidonic acid according to any one of claims 1 to 6, wherein the carbon source concentration at the start of culturing is at least 8% by weight.

8. A process for producing dihomo-γ-linolenic acid comprising the steps of culturing a microorganism belonging to the genus Mortierella and having resistance to a carbon source of high concentration in a medium

having a carbon source concentration of at least 4% by weight at the start of culturing and containing a Δ5 denatures inhibitor, thereby forming dihomo-γ-linolenic acid or lipid containing dihomo-γ-linolenic acid, and recovering dihomo-γ-linolenic acid.

9. A process for producing lipid containing dihomo-γ-linolenic acid comprising the steps of culturing a microorganism belonging to the genus Mortierella and having resistance to a carbon source of high concentration in a medium having a carbon source concentration of at least 4% by weight at the start of culturing and containing a Δ5 desaturase inhibitor, thereby forming lipid containing dihomo-γ-linolenic acid, and recovering lipid containing dihomo-γ-linolenic acid.

10. The process according to claim 8 or 9, wherein the microorganism belonging to the genus Mortierella is a microorganism belonging to subgenus Mortierella.

11. The process according to claim 10, wherein the microorganism belonging to subgenus Mortierella is a microorganism belonging to the species alliacea.

12. The process according to claim 10, wherein the microorganism belonging to subgenus Mortierella is a microorganism belonging to the species alpina.

13. The process according to claim 10, wherein the microorganism belonging to subgenus Mortierella is the genus Mortierella, strain SAM 2197 (FERM BP-6261).

14. The process for producing arachidonic acid or lipid containing dihomo-γ-linolenic acid according to any one of claims 8 to 13, wherein the carbon source concentration at the start of culturing is at least 8% by weight.

15. A process for producing eicosapentaenoic acid comprising the steps of culturing at temperatures of up to 20°C a microorganism belonging to the genus

Mortierella and having resistance to a carbon source of high concentration in a medium having a carbon source concentration of at least 4% by weight at the start of culturing, thereby forming eicosapentaenoic acid or lipid containing eicosapentaenoic acid, and recovering eicosapentaenoic acid.

16. A process for producing lipid containing eicosapentaenoic acid comprising the steps of culturing at temperatures of up to 20°C, a microorganism belonging to the genus Mortierella and having resistance to a carbon source of high concentration in a medium having a carbon source concentration of at least 4% by weight at the start of culturing, thereby forming lipid containing eicosapentaenoic acid, and recovering lipid containing eicosapentaenoic acid.

17. The process according to claim 15 or 16, wherein the microorganism belonging to the genus Mortierella is a microorganism belonging to subgenus Mortierella.

18. The process according to claim 17, wherein the microorganism belonging to subgenus Mortierella is a microorganism belonging to the species alliacea.

19. The process according to claim 17, wherein the microorganism belonging to subgenus Mortierella is a microorganism belonging to the species alpina.

20. The process according to claim 17, wherein the microorganism belonging to subgenus Mortierella is the genus Mortierella, strain SAM 2197 (FERM BP-6261).

21. The process for producing eicosapentaenoic acid or lipid containing eicosapentaenoic acid according to any one of claims 15 to 20, wherein the carbon source concentration at the start of culturing is at least 8% by weight.

22. Animal feed comprising microbial cells of a microorganism belonging to the genus Mortierella and having resistance to a carbon source of high concentration.

23. The animal feed according to claim 22, wherein the microorganism belonging to the genus Mortierella is a microorganism belonging to subgenus Mortierella.

24. The animal feed according to claim 23, wherein the microorganism belonging to subgenus Mortierella is a microorganism belonging to the species alliacea.

25. The animal feed according to claim 23, wherein the microorganism belonging to subgenus Mortierella is a microorganism belonging to the species alpina.

26. The animal feed according to claim 23, wherein the microorganism belonging to subgenus Mortierella is the genus Mortierella, strain SAM 2197 (FERM BP-6261).

~~27. The animal feed according to any one of claims 22 to 26, wherein the animal feed further contains other feed components.~~

28. The animal feed according to claim 22 or 27, wherein the animal feed is poultry feed.

29. The animal feed according to any one of claims 22 to 28, wherein the highly unsaturated fatty acid is arachidonic acid, dihomo-γ-linolenic acid and/or ~~eicosapentaenoic acid.~~

30. The genus Mortierella, strain SAM 2197 (FERM BP-6261) having resistance to a carbon source of high concentration.

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